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TITLE: Method of plasma etching silicon nitride

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[0003] U.S. Pat. No. 6,153,514 discloses a method of forming a self-aligned dual damascene structure which includes a lower conductive layer (e.g., copper or copper alloy), a first etch stop layer (e.g., silicon nitride), a first dielectric layer (e.g., low k dielectric material wherein k < 4), a second etch stop layer (e.g., silicon nitride), a second dielectric layer (e.g., low k dielectric material), a hard mask layer (e.g., silicon nitride), and a photoresist layer patterned to provide the feature to be etched into the second dielectric layer. According to this patent, the nitride hard mask layer is etched with CHF<sub>3</sub>/N<sub>2</sub>, the second dielectric layer is etched with N<sub>2</sub>/H<sub>2</sub>O<sub>2</sub> or N<sub>2</sub>/H<sub>2</sub>, the second etch stop layer is etched with CHF<sub>3</sub>/N<sub>2</sub> and the first dielectric layer is etched with C<sub>4</sub>F<sub>8</sub>/Ar/O<sub>2</sub>/CO. U.S. Pat. No. 5,611,888 discloses a method of plasma etching silicon nitride using a mixture of 10-20 sccm Freon 23 (CHF<sub>3</sub>) and 70-110 sccm O<sub>2</sub>.